

New or Little-Known Crane-Flies from the Hawaiian Islands (Tipulidae, Diptera).

BY CHARLES P. ALEXANDER, AMHERST, MASS.

(Presented by Mr. Bryan at the meeting of June 3, 1922.)

The following records are based on a collection of Tipulidae kindly sent to me by Dr. James F. Illingworth. The types and uniques are preserved in the collection of the Bishop Museum, Honolulu. The chief papers dealing with the Tipulidae of the Islands are the following:

Grimshaw, Percy. Fauna Hawaiiensis, vol. III, pp. 6-10; 1901.

Alexander, Charles P. Notes on the Crane-Flies of the Hawaiian Islands. Annals Ent. Soc. Amer., vol. XII, pp. 25-30; 1919.

It now appears that the species of *Limnobia*, *Styringomyia*, and *Trimicra* are more widely distributed than was believed at the time of their original characterization in 1901. The numerous species of *Dicranomyia*, on the other hand, all seem to be endemic. The same is true of the single species of *Gonomyia* known from the Islands.

Limnobia perkinsi Grimshaw.

The following localities are represented:

Oahu: Honolulu, October, 1919 (E. H. Bryan, Jr.).

Fiji: Rewa, March, 1906 (F. Muir).

The species is now known from other Pacific Islands as Samoa and Tahiti. In previous papers, the writer had considered this species as being more properly referable to *Libnotes*. Following the definition of the latter genus as diagnosed by Mr. F. W. Edwards, the present species is to be retained in *Limnobia*.

Dicranomyia stygipennis Alexander.

(*D. brunnea* Grimshaw, preoccupied.)

The following records are available:

Oahu: Kolekole, Waianae, February 29, 1920 (E. H. Bryan, Jr.); Pauoa V., June 17, 1917 (J. C. Bridwell);

Moanalua V., altitude 1200 feet, April 9, 1922 (E. H. Bryan, Jr.).

Maui: altitude 2000 feet, March 19, 1919 (J. A. Kutsche).

Kauai: altitude 4000 feet, April 23, 1919 (J. A. Kutsche);

Kokee, January, 1919 (J. A. Kutsche).

The synonymy of *D. brunnea* with *stygiipennis* is established by a comparison of paratypes of the two. Grimshaw described the wings as being "hyaline," which is certainly not the case. The present species appears to be the most abundant Tipulid in the Islands.

***Dicranomyia grimshawi* Alexander.**

(*D. apicalis* Grimshaw, preoccupied.)

The following localities are represented:

Oahu: Cooke Trail, April 5, 1919 (O. H. Swezey).

Kauai: altitude 4000 feet, April 23, 1919 (J. A. Kutsche);

Kokee, March 30, 1919 (J. A. Kutsche).

***Dicranomyia hawaiiensis* Grimshaw.**

The following locality is added:

Hawaii: Honaunau, June, 1919 (J. G. Stokes).

***Dicranomyia kauaiensis* Grimshaw.**

This very rare crane-fly is represented by material from near the type-station.

Kauai: Summit Camp, September 2, 1920 (O. H. Swezey).

***Dicranomyia foliocuniculator* Swezey.**

Three specimens from the following stations:

Oahu: Cooke Trail, April 5, 1919 (O. H. Swezey);

Moanalua V., altitude 1200 feet, April 9, 1922 (E. H. Bryan, Jr.).

***Dicranomyia nigropolita* sp. n.**

General coloration shiny black; anterior part of vertex and a conspicuous ventral area on thoracic pleura silvery white pubescent; wings faintly infuscated, the stigma conspicuous, dark brown; cell *first M*₂ open by the atrophy of *m*.

Male. Length about 3 mm.; wing, 4.6 mm.

Female. Length about 4 mm.; wing, 4.8 mm.

Rostrum and palpi brownish black. Antennae black, the basal flagellar segments subglobular. Head black, the narrow vertex silvery white anteriorly.

Pronotum obscure yellow, blackened medially. Mesonotum shiny black; in some cases the humeral region of the praescutum obscure yellow; lateral margins of the praescutum very narrowly yellowish. Pleura brownish black, shiny, with a conspicuous, ventral, obscure yellow area that is densely covered with a microscopic appressed pubescence that appears like a bloom when viewed obliquely from above; this area extends from behind the fore coxa to dorsal of the mid-coxa. Halteres pale brown, the base of the stem and the knobs yellow. Legs with the fore coxae obscure yellow; mid-coxae yellow, the base extensively infuscated; posterior coxae with the outer face infuscated; trochanters obscure yellow; remainder of the legs black. Wings with a faint brownish tinge; stigma conspicuous, oval, dark brown; veins dark brown. Venation: *Sc* short, *Sc1* ending just before the origin of *Rs*, *Sc2* apparently atrophied; cell *first M2* open by atrophy of *m*; basal deflection of *Cu1* close before the fork of *M*.

Abdomen black, the ventral lobes of the hypopygium brownish yellow.

Habitat.—Hawaiian Islands.

Holotype, male, Kaumuahona, Oahu, November 23, 1919 (E. H. Bryan, Jr.).

Allotype, female, Southeast Koolau Mountains, Oahu, February 11, 1917 (J. C. Bridwell).

Paratypes, female, Wahiawa, Oahu, October 31, 1920 (O. H. Swezey); male, Waihee, Maui, September 4, 1919 (E. H. Bryan, Jr.).

This handsome little fly is readily told by the shiny black coloration and the open cell *first M2*.

***Styrimomyia didyma* Grimshaw.**

The following records are available in this material:

Oahu: Central Y. M. C. A., Honolulu, February 16, 1922 (William A. Meinecke); one pair, taken in copula.

Hawaii: Honaunau, August 13, 1919 (O. H. Swezey).

***Trimicra pilipes* (Fabricius).**

Mr. F. W. Edwards believes that most, if not all, of the rather numerous described species of the genus are synonyms or varieties of the common *T. pilipes*. There can be no doubt but that the total number of valid species is much less than has generally been supposed. The Hawaiian records have been listed hitherto as *T. lateralis* Grimshaw. The following observations are available:

Kauai: Kaholuamano, April, 1920 (J. A. Kusche).

Hawaii: Honaunau, June, 1919 (J. G. Stokes).

Undescribed Species of Australasian and Oriental Crane-Flies (Tipulidae, Diptera).

BY CHARLES P. ALEXANDER, AMHERST, MASS.

(Presented by Mr. Bryan at the meeting of July 6, 1922.)

The species herein described as new are from Southeastern China, Papua, and Eastern Australia and were collected by Messrs. Kershaw and Muir, and the late Messrs. R. Helms and F. W. Terry. They were included in the collections of the Bernice P. Bishop Museum and were kindly submitted to me for determination by my friend, Dr. James F. Illingworth, to whom I am indebted for many kind favors.

GENUS GYNOPLISTIA WESTWOOD.

Gynoplistia nigrithorax, sp. n.

General coloration black; head reddish; antennae with ten branched segments; wings with a very heavy brown pattern.

Female? Wing, 11 mm.

Rostrum obscure reddish; mouth-parts dark; palpi dark red, paler at the incisures. Antennae reddish, the pectinations dark brown; seventeen-segmented, the formula being $2+2+8+5$, the longest pectination (on flagellar segments five and six) about three times the segment; pectination of flagellar segment ten shorter than the segment. Head shiny red.

Pronotum velvety black. Mesonotum subshiny, black throughout; pseudosutural foveae very large, oval in outline. Pleura velvety black. Halteres black, the extreme base obscure reddish. Legs with the coxae and trochanters black, the femora abruptly orange with the tips narrowly infuscated, broadest on the posterior femora, almost obliterated on the fore femora; tibiae orange, the fore tibiae slightly infuscated, the extreme bases and the broader apices darkened; tarsi black. Wings with a faint yellowish tinge, the base and cell *C* more strongly flavous; a very heavy brown pattern, appearing as two broad crossbands, the first broadest, extending from arculus to beyond the level of the origin of *Rs*, interrupted in cell *R* proximad of *Rs* and not including cell *second C* except the base; basal two-fifths of cell *second A* flavous; the second band occupies the level of the cord, is of nearly equal width throughout and completely traverses the wing; wing-apex darkened, restricting the ground-color to a very narrow and ill-defined area across the apical cells; veins dark brown, brighter in the yellow areas. Venation: Cell *M1* longer than its petiole; cell *first M2*

arcuated at its proximal end; basal deflection of *Cu1* about one-third its length beyond the fork of *M*.

Abdomen broken.

Hab.—Papua.

Holotype, female ?, Laloki, New Guinea, November, 1910 (*F. Muir*).

Type in the Hawaiian Sugar Planters' Experiment Station.

***Gynoplistia fumipennis*, sp. n.**

General coloration black, the thoracic pleura dusted with grey; legs black; wings suffused with dark brown; abdomen orange, the terminal two segments and the ovipositor black.

Female. Length, 12.5 mm.; wing, 10.5 mm.

Rostrum and palpi black. Antennae black, the flagellum badly twisted in the unique type so the number of segments cannot be accurately determined. Head shiny black.

Thorax shiny black, the pleura with an appressed microscopic grey pubescence that appears like a bloom. Halteres brownish black. Legs with the coxae black, dusted with grey; remainder of the legs black. Wings with a dark brown suffusion, almost uniform over the entire surface, the costal region only being a little darker, pale longitudinal streaks in cells *R*, *M*, *Cu1*, *first A*, *second A*, and along vein *M*; veins dark brown. Venation: *r* near tip of *R1*; petiole of cell *M1* very short, about one-half longer than *m*; basal deflection of *Cu1* just beyond midlength of cell *first M2*.

Abdomen bright orange, segments eight and nine shiny black. Ovipositor black, the valves elongate.

Hab.—New South Wales.

Holotype, female, Blue Mountains, December, 1912.

Type in the Bishop Museum.

***Gynoplistia helmsi*, sp. n.**

General coloration greenish black; abdomen violaceous, the third and genital segments reddish; legs black, the femoral bases broadly reddish; wings subhyaline, heavily banded with brown; antennae with not more than seventeen segments, the basal seven flagellar segments pectinate.

Female. Length, 8.8 mm.; wing, 8.2 mm.

Rostrum greenish black; palpi black. Antennae with sixteen or seventeen segments, the formula being 2+2+5+7 (or 8), black. Head greenish black.

Mesonotum greenish black, shiny. Pleura black, dusted with whitish. Halteres yellow. Legs with the coxae black, dusted with white; trochanters black; femora black with the basal half or less reddish, the tips somewhat clavate; remainder of the legs black; posterior legs lost. Wings sub-

hyaline, the base yellowish; cell *C* light brown, *Sc* dark brown; a heavy brown pattern distributed as follows: bases of cells *R* and *M*, continued into cells *Cu* and *first A*; a large, quadrate area at origin of *Rs*, barely reaching *M*; a crossband extending from the stigma across the wing along the cord, leaving a pale spot in cell *first M2*; wing-tip rather narrowly dark brown, including the distal two-fifths of cells *R2*, *R3*, and *R5*; all of *M1* and the extreme tip of *second M2*; a brown cloud beyond mid-length of cell *second A*; veins brown, yellow at the base of the wing. Venation: Cell *second R1* very small, triangular; cell *M1* about as long as its petiole; basal deflection of *Cu1* at about one-third the length of cell *first M2*.

Abdomen violaceous, the third segment reddish. Ovipositor elongate, orange, the tips darkened.

Hab.—New South Wales.

Holotype, female, Blackheath, January, 1904 (*R. Helms*).

Type in the Bishop Museum.

This species is dedicated to the memory of the collector.

GENUS ERIOCERA MACQUART.

Eriocera praelata, sp. n.

Male. Length, 24 mm.; wing, 24 mm.

By Edwards' Key to the Old World species of *Eriocera*, the present species runs down to *E. mesopyrrha* (Wiedemann), from which it differs as follows:

Size very large, one of the largest species of the genus known. Antennal scape dark brown, the flagellum obscure yellow, the terminal segments darker. Head dark brown, the vertical tubercle small, conical. Mesonotal praescutum rich reddish brown, the remainder of the mesonotum darker; scutellum conspicuously protuberant. Pleura brown. Legs with the fore and middle femora reddish brown, the tips narrowly infuscated; posterior femora dark brown, the bases brighter. Wings rich brown with a broad but diffuse yellowish crossband, this lying mostly proximad of the cord; base of anal cells similarly brightened; distal third of costal region dark brown; the yellow discal band includes the bases of cells *R3* and *first M2*; veins pale brown. Venation: *Rs* spurred at origin; *r* about one and one-half times its length beyond the fork of *Rs*; *M2* shorter than the petiole of cell *M1*; vein *second A* strongly sinuous, bent strongly toward vein *first A* at the tip so the large cell *second A* is narrower at the margin than is cell *Cu*. Abdomen rich reddish brown, segments one and five to nine brownish-black, the caudal margins of tergites two to four narrowly darkened; basal half of tergite two shiny; hypopygium black.

Hab.—China.

Holotype, male, Macao (*F. Muir*).

Type in the Hawaiian Sugar Planters' Experiment Station.

Eriocera muiri, sp. n.

General coloration black; wings brown, cells *C* and *Sc* yellow; a very broad yellow crossband before the cord; abdomen black, the basal halves of the tergites scoriaceous.

Male. Length, 14 mm.; wing, 14.5 mm.

Rostrum and palpi dark brown. Antennae dark brown, the terminal flagellar segments broken, the basal flagellar segments a little paler than the scape. Head dark brown.

Mesonotum dark brown, with three almost concolorous smooth stripes; scutellum and postnotum shiny dark brown, the scutellum projecting. Pleura shiny dark brown. Halteres rather short, dark brown, paler basally. Legs dark brown. Wings brown; cells *C* and *Sc* yellow; wing-apex broadly darker brown; a very broad yellow crossband, lying almost wholly proximal of the cord; veins dark brown, those in the yellowish areas paler. Venation: *r* on *R*₂ about one and one-third times its length beyond the fork of *Rs*; cell *M*₁ present; vein second *A* sinuous, cell second *A* at wing-margin a little narrower than cell *Cu*; cell second *A* large.

Abdominal tergites bicolorous, the base of each segment scoriaceous, lilaceous brown, the apical half velvety black; hypopygium dark; sternites more uniformly brown.

Hab.—China.

Holotype, male, Macao (*F. Muir*).

Type in the Hawaiian Sugar Planters' Experiment Station.

This interesting *Eriocera* is named in honor of the collector, Mr. Frederick Muir. By Edwards' Key, this species runs out at couplet seventy-one by the combination of scoriaceous crossbands on the abdominal tergites and the presence of five posterior cells.

Eriocera obliqua, sp. n.

Female. Length, 15-16 mm.; wing, 14-14.5 mm.

Allied to *E. nepalensis* (Westwood), from which it differs as follows:

Wings with the base not at all brightened; the white band before the cord broadest in cells *R* and *M*, narrowed at the ends. Venation: *r* very oblique as in this group of species, inserted at or before the fork of *R*₂+3. Ovipositor with the base black, only the valves dark horn-colored.

Hab.—China.

Holotype, female, Macao (*F. Muir*).

Paratopotypes, two females.

Type in the Hawaiian Sugar Planters' Experiment Station.

The general appearance of this fly is more like *E. hilpa*

Walker and allies (*hilpoides* Alexander, *dauidi* Alexander, etc.), from all of which it is readily told by the position and course of *r*.

***Eriocera terryi*, sp. n.**

Male. Length, 12.8 mm.; wing, 11.5 mm.

Female. Length, 15 mm.; wing, 12.4 mm.

Related to *E. geminata* Alexander (Japan), differing as follows:

Antennae of the male longer, with long and conspicuous setae. Thoracic stripes black, almost concolorous with the interspaces. Legs brownish-black throughout. Wings with the discal pale band larger, oblique in position and pale yellow in color, only a little paler than the paired spots in cell *R*; the discal band extends from cell *Sc1* across cells *second R1*, *R*, and *M*, barely attaining cell *Cu*; a pale area in the center of cell *Cu1*. Venation: *r* approximately its own length beyond the fork of *R2+3* and twice its length from the tip of *R1*; fork of vein *Cu* forming a greater angle; basal deflection of *Cu1* at or before midlength of cell *Cu1*. Ovipositor and genital segment fiery orange.

Hab.—China.

Holotype, male, Hongkong, 1908 (*F. W. Terry*).

Allotopotype, female, in copula with the type.

Type in the Hawaiian Sugar Planters' Experiment Station.

This interesting species is named in memory of the collector, the late Mr. F. W. Terry. By Edwards' Key, it runs out at *E. hilpa* Walker, to which group of species it should be referred.

***Eriocera submorosa*, sp. n.**

General coloration black; vertical tubercle deep red; wings brown; cell *M1* lacking; abdominal tergites with alternate opaque and shiny cross-bands.

Male. Length about 12.5 mm.; wing, 12.2 mm.

Rostrum and palpi dark brown. Antennae with the scape brown, the flagellum black; antennae, if bent backward extending beyond the base of the abdomen. Head black, the region of the vertical tubercle deep red with a small, circular black spot.

Pronotum dark brown medially, paler laterally. Mesonotum velvety black. Pleura brownish black. Halteres dark brownish black. Legs brownish black throughout. Wings strongly tinged with brown, somewhat darker at the base and in the costal region; veins dark brown. Venation: *Sc1* ending beyond the fork of *R2+3*; *r* on *R2* about two and one-half times its length beyond the fork and on *R1* nearly four times its length from the tip; cell *M1* lacking; cell *first M2* rectangular; basal deflection of *Cu1*

before midlength of cell *first M*₂; *Cu*₂ about one-half the length of the basal deflection of *Cu*₁.

Basal abdominal tergite velvety black; segments three to seven more dilated and with the basal two-thirds of each segment shiny, glabrous, somewhat glaucous; hypopygium black; sternites deep reddish brown.

Hab.—China.

Holotype, male, How-lik Mountains, 1907 (*Kershaw*).

Type in the Hawaiian Sugar Planters' Experiment Station.

GENUS PSELLIOPHORA OSTEN SACKEN.

Pselliophora kershawi, sp. n.

General coloration orange; wings yellow, the apex dark brown; wing-base variegated with paler brown; eighth sternite of male hypopygium not projecting.

Male. Length, 19 mm.; wing, 15.5 mm.

Female. Length, 25 mm.; wing, 19 mm.

Rostrum reddish; palpi reddish brown. Antennae orange, the terminal segments darker; all flabellations black; pectination of first flagellar segment in the male stout, orange; antennae of female orange, the terminal three segments minute. Head orange.

Thorax entirely orange, immaculate. Halteres orange, the knobs a little darker. Legs with the coxae and trochanters concolorous with the thorax; femora obscure orange, the posterior femora with the tips conspicuously infuscated; tibiae orange, the posterior tibiae with a broad but diffuse pale annulus at base; metatarsi brownish orange, the terminal segments brown. Wings yellow, the apex beyond the cord dark brown, this including the distal half of the stigma; the yellow base is extensively suffused by paler brown, including a very broad, oblique crossband, broadest in cells *R* and *M*, narrower in cells *Cu* and *first A*; cell *second A* and the caudal margin of *first A* entirely dark; the yellow ground-color appears as a broad, conspicuous band completely traversing the wing before the cord and a narrow longitudinal area in the bases of cells *Cu* and *first A*, on either side of vein *first A*, continued across cell *first A* to the margin near the tip of vein *second A*. In the male the brown basal pattern is somewhat less intense, especially in cells *R* and *M*, and the base of cell *second A* is yellow. Venation: Cell *M*₁ barely sessile; *m-cu* long.

Abdomen orange; caudal margin of ninth tergite of male and the ovipositor of the female black. Male hypopygium with the ninth tergite having an oval median notch, the lateral lobes obliquely truncated, with the caudal face tumid, heavily blackened, the surface microscopically roughened. Ninth sternite with two flattened mesal plates, each terminating in an acute spine directed dorsad, the caudal margin of the plates lying side by side, the ventral mesal angle produced caudad into a chitinized rod

which is directed ventrad, the apex feebly bilobed. Eighth sternite not produced.

Hab.—China.

Holotype, male, How-lik Mountains, 1907 (*Kershaw*).

Allotopotype, female.

Type in the Hawaiian Sugar Planters' Experiment Station.

This interesting species of *Pselliophora* is dedicated to the collector.

GENUS HABROMASTIX SKUSE.

Habromastix heroni similior, subsp. n.

Male. Length, 15 mm.; wing, 18 mm.; antenna, 19 mm.

Female. Length, 21 mm.; wing, 17 mm.; antenna, 6.5 mm.

Generally similar to *H. heroni* Alex. (Dorrigo, New South Wales), differing in the wing-pattern, as follows:

Pale ante-stigmal area in costal cell small or lacking; the distal pale area in cell *M* completely traverses the cell from vein *M* to *Cu* (in *heroni* confined to the vicinity of vein *Cu*); center of cell first *M*₂ usually pale.

Venation: *Rs* shorter; cell *M*₁ short-petiolate, sometimes sessile.

Hab.—New South Wales.

Holotype, male, Sydney, March, 1910 (*R. Helms*).

Allotopotype, female, April 10, 1909 (*R. Helms*).

Paratopotypes, two males, April 15-20, 1909.

Type in the Bishop Museum.

Other Malayan, Oriental, and Australasian Crane-Flies.*

In addition to the foregoing new species of Tipulidae described by Professor Alexander, the following species from the same collections were determined by him. Specimens in the Bishop Museum.

AUSTRALIA, HELMS COLLECTION.

Gynoplistia melanopyga Sch., Sydney, N. S. W.

Gynoplistia bella (Wh.), Sydney, N. S. W.

Ptilogyna ramicornis (Wh.), Centennial Park.

Leptotarsus scutellaris Skuse, Blackheath, N. S. W.

Pseudolimnophila indecora Al., Perth, W. Aust.

* List furnished by E. H. Bryan, Jr.

Macromastix constricta Skuse, Sydney, N. S. W.
Macromastix costalis (Swed.), Sydney, N. S. W.
Ischnotoma serricornis (Macq.), Sydney, N. S. W.
Ischnotoma rubroabdominalis (Macq.), Millthorpe, N. S. W.
Discobola australis (Skuse), Ourimbah, N. S. W.
Trimicra hirtipes (Wh.), Sydney, N. S. W., Perth, W. Aust.
Plusiomyia gracilis (Wh.), Sydney, N. S. W.
Gnophomyia fascipennis (Thom.), Sydney, N. S. W.
Dolichocheza cinerea Macq., Sydney, N. S. W.
Dolichocheza longifurca Skuse, Sydney, N. S. W.
Dicranomyia sp., Sydney, N. S. W.

MALAYAN AND ORIENTAL.

(Collected by F. Muir, except where otherwise noted.)

Eriocera chrysomela Edw., Lo fou Mountains (100-1000 feet), China.
Eriocera nepalensis West., Lo fou Shan (100-1000 feet), China.
Eriocera basillaris Wd., Java.
Eriocera paenulata End., Sandaglaija, Java.
Eriocera perennis O. S., Los Banos, Philippine Islands (Williams).
Ctenacroscelis sp. (locality not given).
Trentepahlia (Mongoma) sp., Amboina material, S. S. Tjibodus.
Conosia irrorata (Wd.), Kowloon (Terry).
Pselliophora gaudens (Walker) Makassar (S. W. Celebes).
Pselliophora tripudians Bezzi, Los Banos, Philippine Islands (Williams).
Pselliophora sp., Macao Island, China.
Tipulodina sp., Macao Island, China.
Nephrotoma sp., Macao Island, China.
Nephrotoma sp., Amboina.

Other papers by Charles P. Alexander on the Crane-flies of these regions are:

1917. Two New Crane-flies from the Philippine Islands, *Inscutor Inscitiae* Menstruus, V, pp. 6-8.
1918. New Species of Tipuline Crane-flies from Eastern Asia. *Journal New York Ent. Soc.*, XXVI, pp. 66-75.

1922. New or little-known Tipulidae (Diptera). Australasian Species.
VIII. Ann. & Mag. of Nat. Hist. (9), IX, pp. 145-160.
IX. Ann. & Mag. of Nat. Hist. (9), IX, pp. 297-315.
X. Ann. & Mag. of Nat. Hist. (9), IX, pp. 505-524.
1922. Undescribed Crane-flies (Tanyderidae and Tipulidae) in the South Australian Museum, No. 2.
Records of the South Australian Museum, II, No. 2, pp. 223-270.